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Middlesex University Mauritius – IEEE Student branch

# Cybersecurity Implications of the Russia-Ukraine conflict



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## \$ whoami

- Joined the **Internet Society** in 2021 as Internet Measurement and Data Expert, currently involved in Measuring the Internet, Routing Security, Internet Peering Infrastructure and Low-Earth Orbit Satellites projects.
- Previously working as Research Manager at **AFRINIC** where I was working on Internet measurement research, and networking security.
- Also involved in the academic community:
  - ACM Internet Measurement Conference (IMC)
  - Passive and Active Measurement Conference (PAM)
  - Network Traffic Measurement and Analysis Conference (TMA)
  - Chaired the EAI AFRICOMM 2020 conference with MDX



Founded in 1992 by pioneers of the early Internet, the Internet Society drives technologies that keep it open and safe. We promote policies that empower people to enable universal access for all.

We stand for a better Internet.

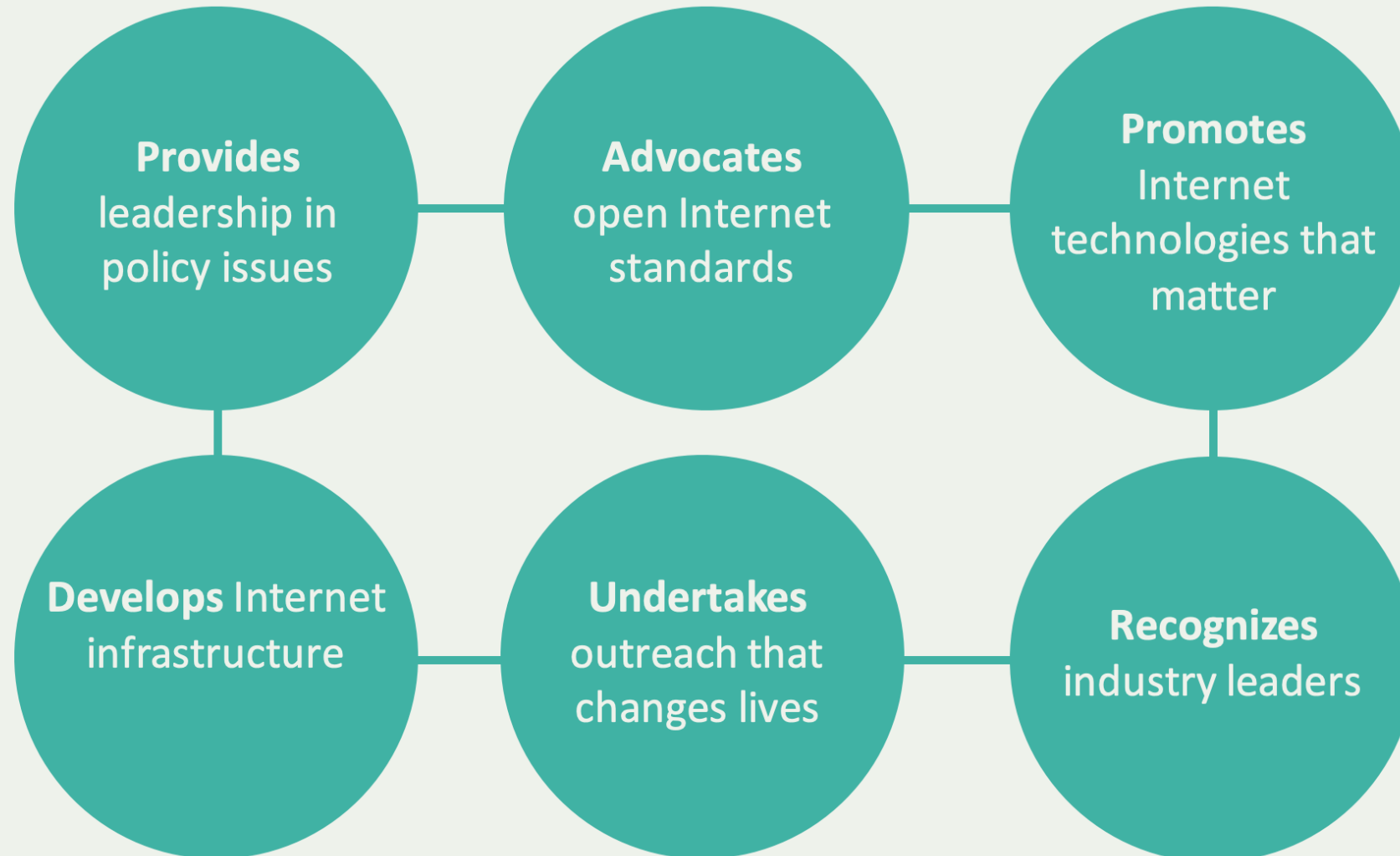


# Global presence

Our global community of members and Chapters span over 230 countries, territories, and areas of geographic interest world-wide.



# The Internet Society at Work



# The Ukraine-Russia Conflict



# Summary of (cyber) events

- Russia invaded Ukraine on 24 February 2022, after months of military buildup.
- Coordinated cyber attacks on multiple locations including Ukraine, NATO countries and their allies.
- Attacks from both sides with the aim to control information flow, by limiting Internet connectivity, disruption infrastructure, fake news, etc.
- Various types of techniques including ransomware, data leaks, cyber espionage.
- EU/US sanctions on the Russian Internet



Source: [Pixabay](#)



# How resilient is the Internet in Ukraine?

- Ukraine has a very well-developed cable infrastructure with several exit points in different neighbouring countries.
- Some 20 Internet Exchange Points
- 50+ datacentres
- 30 network operators
- Low market concentration
- Diversity in upstream providers



Source: ITU Maps

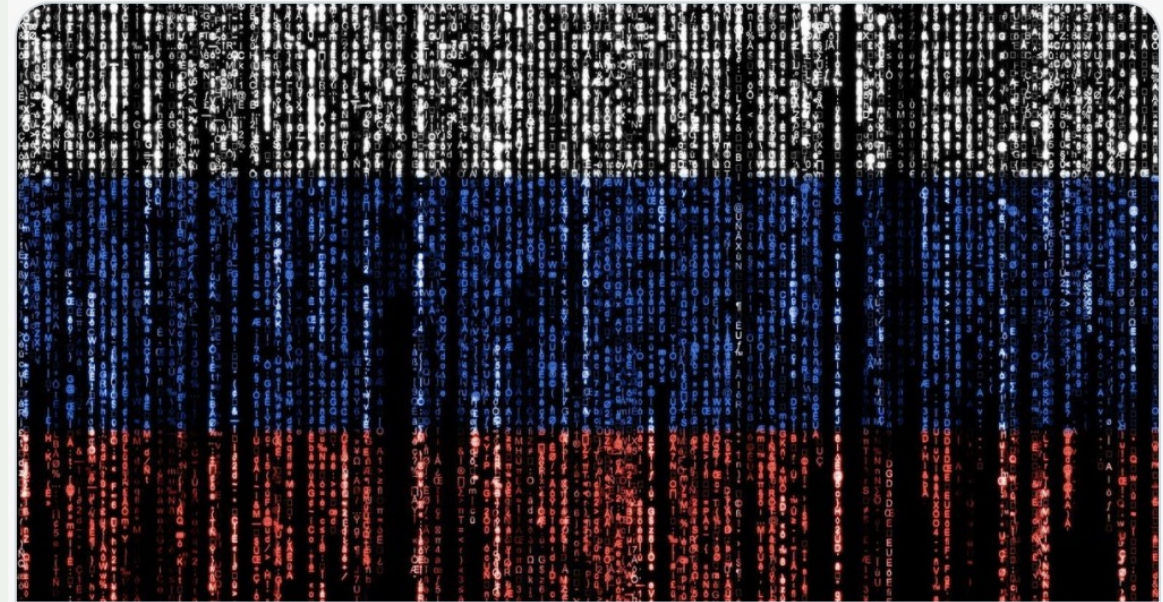


# Ukrainian Internet under pressure

- March 28, 2022 – Ukrtelecom connectivity dropped significantly due to cyberattacks on its infrastructure, disabling routing infrastructure.
- Local and regional outages in the areas of fighting
- Buildings being bombarded including data centers
- Electricity, connectivity and cooling systems can be hit at any moment
- Starlink satellites deployed providing connectivity

Forbes  @Forbes · 3h

**#BREAKING:** A “powerful” cyberattack has hit **Ukraine**’s national telecommunications company, Ukrtelecom. It’s being described as the most severe cyberattack since the start of the Russian invasion in February



forbes.com

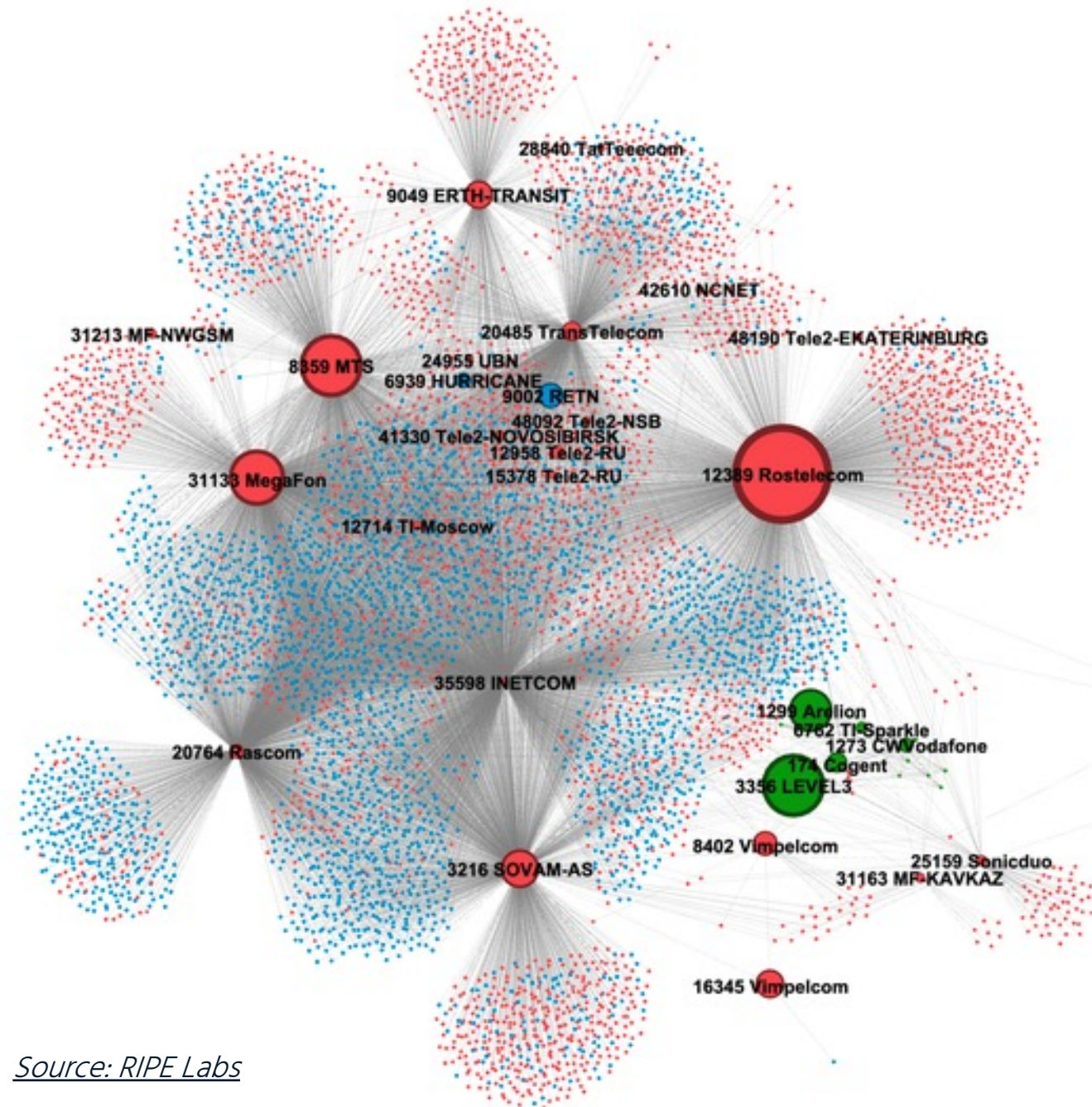
‘Most Severe’ Cyberattack Since Russian Invasion Crashes Ukraine In...  
An attack on the national telecoms company Ukrtelecom has been called the most significant during the war to date.

# Sanctions on Russia



# The Russian Internet

- Red nodes: connection within Russia
- Blue nodes: connection outside of Russia
- Green nodes: Tier 1 providers (Lumen, Cogent, Level3, Sparkle)
- March 4: Lumen and Cogent announced they are stopped service to Russia.
- Russian networks have less options to reach overseas networks
- Overseas networks have less options to reach Russian networks
- Potential Impact on latency



*Source: RIPE Labs*



# Impact of sanctions

- Google and Twitter have stopped serving ads in Russia. The reason mainly is to crackdown on misinformation by Russian state-owned news agencies.
- Amazon, Airbnb, Apple, Paypal, Netflix, etc stopped their services.
- March 11: LINX (London Internet Exchange) has removed Megafon and Rostelecom from its infrastructure.
- Certification authorities have stopped certs renewal.
- Russian has created its own trusted TLS certificate Authority (CA), asked users to use Russian-made browsers

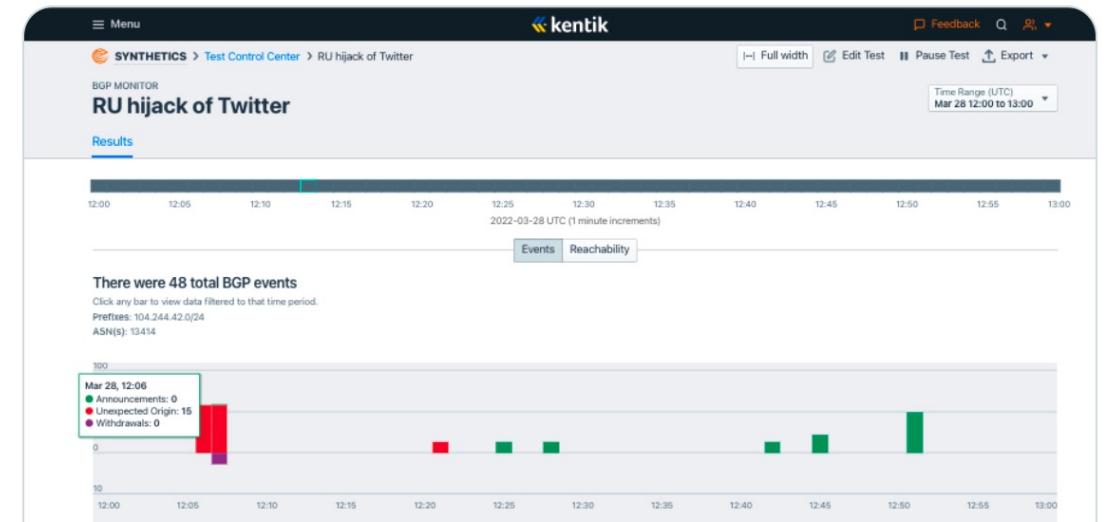


Doug Madory  
@DougMadory

From 12:05-12:50 UTC, RU telecom RTComm (AS8342) hijacked a prefix (104.244.42.0/24) belonging to Twitter.

The hijack didn't propagate far due to a RPKI ROA which asserted AS13414 was the rightful origin.

This is the same prefix hijacked during the coup in Myanmar last year.



# Splinternet

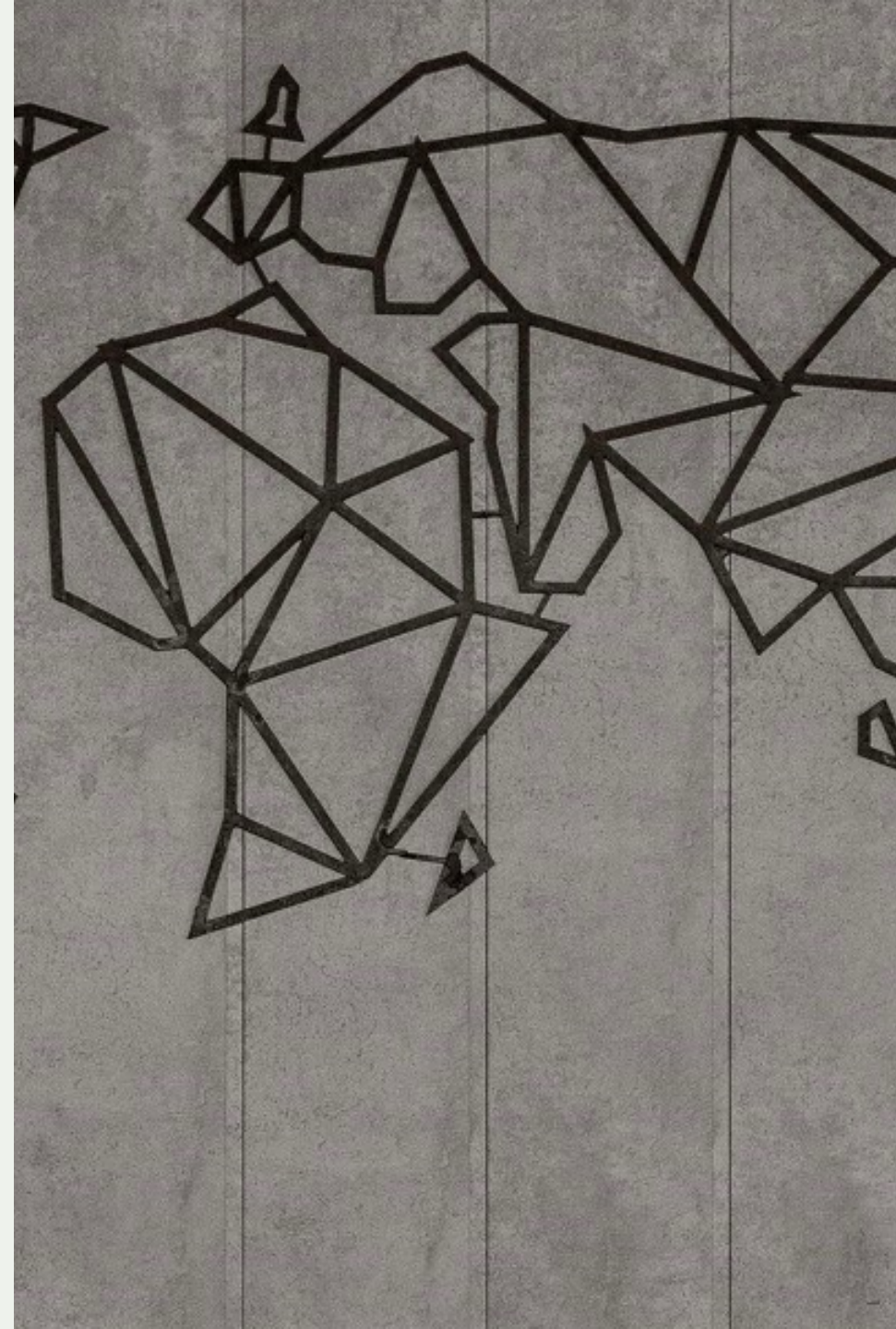


The “Splinternet” is the idea that the open, globally connected Internet we all use splinters into a collection of fragmented networks controlled by governments or corporations.

- “RussiaOnline” or “RUNet”
- Great firewall of China
- The Internet has succeeded *because* of its open, unrestricted access and common protocols. To keep it that way, we must stop its splintering and fragmentation.



Source: [Marjan Blan on Unsplash](#)



# Protecting the core properties of the Internet



# Internet Way of Networking

- An Accessible Infrastructure with a Common Protocol
- Open Architecture of Interoperable and Reusable Building Blocks
- Decentralized Management and Single Distributed Routing System
- Common Global Identifiers
- A Technology Neutral, General-purpose Network

## Enablers of an Open, Globally Connected, Secure and Trustworthy Internet

### Scenario: Refusing Russian Networks

Easy and unrestricted access	X
Unrestricted use and deployment of Internet technologies	X
Collaborative development, management, and governance	X
Unrestricted reachability	X
Available capacity	X
Data confidentiality of information, devices, and applications	
Integrity of information, applications, and services	
Reliability, resilience, and availability	X
Accountability	X
Privacy	

# The impact of disconnecting Russia

<h2>Threats</h2>	<ul style="list-style-type: none"><li>• Disrupt network operations far beyond a country's border</li><li>• Have unintended consequences that undermine the use of the Internet by people in Russia</li></ul>	<ul style="list-style-type: none"><li>• Splinter the Internet along geographical, political, commercial, and technical boundaries</li><li>• Set a dangerous precedent that undermines trust in a multistakeholder governance processes</li></ul>
<h2>Recommendations</h2>	<ul style="list-style-type: none"><li>• Resist calls to cut people off the Internet.</li><li>• Consider the secondary effects of sanctions that may impact and undermine the Internet and access for users in Russia and worldwide</li></ul>	<ul style="list-style-type: none"><li>• Resist actions that politicize Internet operations to fulfill political agendas.</li><li>• Conduct Internet impact assessments before any proposal that could impact the Internet.</li></ul>



# Why the World Must Resist Calls to Undermine the Internet

- The Internet allows people who otherwise would be silenced to speak, so it should be no surprise that there are people the world over trying to undermine the Internet.
- Without the Internet, the rest of the world would not know of atrocities happening in other places. And without the Internet, ordinary citizens of many countries wouldn't know what was being carried out in their name.



Andrew Sullivan  
ISOC CEO

We must never waver from this vision. The Internet is for everyone.



Ted Hardie  
Chair, ISOC Board of Trustees

Closing Off the Internet Won't Silence Governments, But It Will Silence Everyone Else

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# Thank you.

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